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Clinical Lecture delivered at St. Bartholomew's Hospital.

(From *International Clinics*, 8th Ser., vol. iii. p. 111, London, T. Lewin and Co., 1899. Reprinted by permission.)

GENTLEMEN,—The subject to which I wish to draw your attention to-day is that of abdominal pain. I do not intend to include all varieties of such pain, but shall confine myself to a few. I do not intend to take up the subject as connected with acute inflammatory disease, and shall deal with some other forms that are less known and often misunderstood.

I have been led to take up this subject by the fact that we have several cases presenting abdominal pain of various kinds in the wards at present. We have one more especially who has been transferred to the care of the surgeons, and who was operated upon the other day. In "Elizabeth" Ward there is a patient with calculus in the gall duct, and in "Rahère" Ward one with pain in the back, which is suspected to be due to renal calculus.

Apart from acute inflammation, pains in the abdomen are generally due to one or two causes—(1) Active contraction or cramp of involuntary muscular fibre; (2) excessive passive dilatation of involuntary muscular fibre.

Most of the organs in the abdomen either consist of, or are largely composed of, involuntary muscular fibre. The first one that attracts our attention is the colon. Spasmodic contraction of the colon gives rise to acute and severe pain, to which the name of colic has been given. This may be due in some instances to cramp-like contraction of the colon, the pain in the involuntary muscular fibre being severe and acute, and just like that which occurs in the calves of the legs after a very long day's walking. Not infrequently it would appear that the pain in the colon is not due to contraction of the colon throughout its whole length, but is rather due to partial contraction at one place and dilatation at another. The name of colic has been extended from the disease

which first gave it the name, to other forms of pain which are not connected with the colon at all. We speak now of biliary colic and of renal colic, and by these terms we understand the pain which is caused by the passage of a calculus through the biliary duct or through the ureter. In these two cases the pain is probably due to the distension of the duct by the calculus which is passing through it, but, of course, as we are unable to examine the duct at the time, we cannot tell how far the pain is due to mere passive distension, and how far it may really be due to a cramp-like contraction of the involuntary muscular fibres in the duct, caused by the stimulus of the calculus within it. It is possible, therefore, that there may be two causes of pain in renal and biliary colic, namely—(1) Passive distension of the duct by the calculus; (2) active contraction, or spasm of the duct, due to reflex irritation from the calculus.

There is another pain which may seem very far removed from colic either of the colon, of the ureter, or of the bile duct, but which I believe is often closely associated in its pathological nature with it—that is the pain of migraine. I do not know whether any of you have been unfortunate enough to suffer from his disease, but you have probably read up the literature, and have found that the statements given by various writers differ very much regarding the condition of the vessels in migraine. According to some authors, the vessels are widely dilated and pulsating forcibly. According to others, the vessels of the head are firmly contracted, spasmodically contracted, so that the arteries feel like a piece of whipcord. Both these statements are quite correct, but each of them is only partially true. I have had the misfortune to suffer from migraine to a great extent, and I have found that when the headache is present, the carotid is widely dilated and pulsating furiously. It feels so much dilated, indeed, that it appears under the finger to be of the thickness of the thumb, instead of the ordinary thickness of the artery. When followed onwards in its course, however, I have sometimes found that as it crosses the temple, the artery is still widely dilated, and part of it pulsating wildly; but on other occasions, instead of this temporal artery being dilated, it is firmly contracted, and feels like a bit of whipcord under the finger; so that if your attention were directed only to the temporal artery, you would say that sometimes it was dilated, and sometimes contracted, yet it is impossible to notice any difference between the pain in these two

cases. But if you examine the carotid artery you always find it widely dilated, and if you pass onwards to the temporal artery, to the little branch that turns upwards along the forehead, you will always find that one contracted so firmly that it is sometimes like a bit of piano-wire under the finger—harder than whipcord. The condition in the arteries, therefore, that we find in cases of headache is proximal dilatation and peripheral contraction, and the pain is apparently due to the fact that the peripheral part of the artery is so firmly contracted. If you check the tension of the peripheral part of the artery by pressing the carotid, you will at once relieve the pain, but unfortunately this runs so close to the vagus nerve that you cannot keep up pressure upon it for any length of time. After a short period of oppression, the irritation to the vagus becomes so great that the whole chest seems to be contracted. There seems to be a tremendous weight upon it. It produces almost a feeling as if a giant's hand were pressing it, and it is necessary to remove the finger from the carotid. At once the pain comes back with a shoot, and continues to increase with every throb of the artery, being diminished in the intervals between the pulses.

Now, this condition which we notice so clearly in the temporal artery and its branches as a cause of pain, and of acute pain, prevails, I believe, in many parts of the body where we cannot see it. That we have frequently in the interior of the abdomen, a similar condition to what we get in the head. We find then one class of pain, which, as I have said, is very little recognised—pain which comes on in the abdomen, is spasmodic in its nature, and occurs for a limited period. This pain is frequently not associated with any disturbance of the movements of the bowels. The bowels may be perfectly regular, digestion may be in every respect good, the health of the individual may appear to be perfect, and yet he suffers frequently from this abdominal pain. In some cases it comes on in the middle of the night and will arouse the patient, who is kept awake by it for several hours, and then he may fall asleep for an hour or two and awake perfectly free. It is a curious fact that sometimes patients who suffer from such pain are perfectly well when they are standing up, but begin to suffer only when lying down; others again are perfectly well when lying down, and only suffer when they are standing up.

It is now about fourteen years ago since my attention was first directed to this class of abdominal pain, by the late Dr. Matthews

Duncan sending me a patient who had seen a great many other men, and had been treated by them without any advantage. I am bound to say that I treated him also without doing him any good whatever. I did not at that time understand the nature of the pain, but I believe now that it is to a great extent due to some irregular contraction, either of the vessels which supply the intestines, or of the intestinal muscular fibres themselves, I cannot at present say to which of these structures the pain is due. The class of case in which you meet this pain is generally that with a rheumatic or gouty tendency. The patient whom I saw first of all was very distinctly gouty, his urine contained large quantities of uric acid crystals, and many crystals of oxalate of lime, but these are not always to be found in the urine of patients suffering from such an affection. In many of these people diet seems to have very little effect. The bowels continue regular, the digestion good, and they seem to be able to take anything they like as far as regards indigestion; more than that, diet does not seem to any great extent, at least, to influence the pain. There are certain causes that are apt to bring it on, perhaps more acutely than it would otherwise be, such as fruits which contain a number of seeds, like figs and strawberries, in which the small seeds are completely indigestible. But with this exception, I do not think articles of diet have much to do with it. I think that wine occasionally tends to bring it on, but its action is so irregular in these cases that I cannot even say that wine has much to do with it. During the attack there is sometimes a little distension of the intestine with flatus, and apparently at one part or another of the bowel there is flatus present and cessation of contraction. There seems to be no reason for this distension in the condition of the bowel itself, but probably it is a nervous dilatation of the same nature as that which occurs to the carotid artery in the case of sick headache. The pain may be relieved generally by the use of some stimulant or carminative. For example, a small quantity of neat brandy with a little peppermint in it will often cause the wind to move, and will relieve pain almost immediately. Other carminatives, such as the essence of ginger in hot water, have a somewhat similar effect, and frequently you may find that a mixture of peppermint, ginger, and sal volatile will relieve it more quickly than most other remedies. Friction over the abdomen will tend to ease it, and when once you begin to hear a gurgling in the intestine, you know the pain will very soon go, because as soon as the wind

in the intestines begins to move, this pain seems to disappear. Sometimes friction between the shoulders, and oddly enough, friction over the trapezius muscles, or over the deltoid, will tend to make the wind pass along the bowel and will relieve the pain.

Now, we do not know why this should be, but, in all probability, it is due to some reflex action through the vagus. The part of the body supplied by the spinal accessory seems to have a peculiar relationship to the stomach and bowels, and if you rub the skin over this part you will often notice reflex action in the stomach and bowels, tending to cause expulsion of wind, and thereby ease to the patient.

We know very little about the pathology of these cases. I was talking over them with Dreschfeld once, and he told me that he knew of one case in which a post-mortem examination had been made, and that atheroma of the vessels supplying the intestine had been found, but so far as I know that is the only information we have of the exact pathology of the cases. As regards the general treatment of them, we treat them very much as we would treat a sick headache. Try to relieve the gouty or rheumatic tendency of the patient. You will find that in such cases as I have mentioned the continuous use of small doses of salicylate of soda, more especially combined with bromide of potassium, will be of great service. Many people get up almost every morning with a headache, and in the same way many people suffer from these pains in the abdomen every morning. The headache passes off in some persons just after breakfast, and these pains disappear in many people just after they get up.

Every now and again we meet with another class of pain in the abdomen which is analogous to the severe headaches which some people suffer from every fortnight or three weeks. Some years ago a doctor came to consult me about a curious form of pain in the abdomen from which he suffered, and which was so severe that he had almost given up his practice. It was in April 1893 that I saw him. He was then *æt.* 39, and for seventeen years he had suffered from pain in the abdomen, with prostration and depression, every eleven days. For two or three days before the pain came on he suffered from flatulence, and the attack began on waking in the morning with uneasiness and slight pain in the abdomen, which gradually increased. If he were to take breakfast he got a sharp pain at once. During the day there was a rumbling and gurgling, and a feeling, he said, as if his pylorus was shut up.

The pain remained constant during the day, but was liable to occasional exacerbations; and if he were shaken at all it became very severe, so that on these days he could hardly drive about in his carriage to see his patients. At the time these pains commenced, he was going up for his second professional examination as a student, and had been working very hard. He then became liable to indigestion, had bitter eructations, was severely ill for a fortnight, and was slightly jaundiced. From that time onward he continued to suffer in the way I have mentioned. The pain through the attack was in the pit of the stomach, and it passed right through to the back; all the other organs were perfectly normal. I should say that he had no headache, but before the attacks came on there was a slight heaviness over the forehead. After examining him carefully, I said to him, "In all probability, you will laugh at my diagnosis. I think you have got headache in your stomach." Instead of laughing, as I expected, he looked startled, and said, "That is very odd. I came up from Edinburgh to consult two or three men, and you are the third man I have seen, and you have all given the same diagnosis." I advised him to take some bromide of potassium and some salicylate of soda, and under this treatment he very greatly improved indeed, so that he is now continuing his practice successfully.

I have met with a very considerable number of cases in which I have diagnosed headache in the stomach, and the other day I found to my astonishment that the mother of a patient had come to a similar diagnosis. She brought her daughter to me, and told me that she suffered from pain in the stomach, but that she also suffered from headache; and sometimes, as the mother said, the pain would go away from the head and come into the stomach, and *vice versa*. In fact, the mother said, "she seemed as if she had got a headache in her stomach." In such cases, I believe that the condition in the vessels of the intestine is likely to be much the same as it is in the head—peripheral dilatation, with proximal contraction—and that the pain occurs in the stomach in the same way as in the head. But then the question comes to be—Why do you have it in the stomach instead of in the head? Now, we know that sick headaches are nearly always determined by some local source of irritation; that in nine cases out of ten people who suffer from them have some defect of vision, the two eyes being of unequal focus, or there is some astigmatism, myopia, or presbyopia. In one case of a student here, the head-

ache depended upon the want of convergence of the two eyes. Occasionally, too, we find that the headaches may depend upon irritation not in the eyes, but in the teeth, or in the nose. If you can remove the local irritation, you will very often relieve the headache, although you leave the general condition of the patient untouched. In the same way, I believe that in a number of these cases of pain in the intestines, there is some source of local irritation, and I believe this to be, in many of them, some old adhesion. Old adhesions due to peritonitis in former days, I believe exist a good deal more frequently than one has any idea of. The operation which was done by Mr. D'Arcy Power, a few days ago, upon Annie K., showed this fact. The history of the case was that she had been perfectly well until nine weeks ago, when she felt a sudden pain on moving, which was first in the left lumbar region and afterwards in the right hip. Now, that is not the history that would lead one to expect a number of old adhesions by binding down the sigmoid flexure and colon of the patient, and yet on opening the abdomen a number of old adhesions were found. The pains I have described are sometimes very persistent, and will last in spite of all sorts of treatment. The longest duration that I have known was in a patient who had them for forty-five years. He was liable to pain every morning and whenever he lay upon his right side; if his bladder became full the pain came on at once, but was relieved by evacuating the bladder. In his case, it seemed to me that he had some old adhesions causing the bladder to become adherent to the intestine. In going into the history of the case, he informed me that, when quite a young man, he had been out in a boat one day with a number of ladies, and he had great desire to pass water. He did not like to do so, and so he held on until he was able to return to land; but from that day onwards he had had this pain. I believe that he had simply stretched his bladder so much that he had a little inflammation round it, and had got adhesion of the bladder to the intestine. In his case I prescribed also bromide of potash and salicylate of soda, treating it just as I would a case of headache, but I have not seen him for years, so do not know whether he was relieved or not.

I may just say a word about the pains in those other patients whom we have in the wards. In the case of the one in "Elizabeth" Ward, who was brought in actually suffering from the pain of hepatic calculus, we found that the pains had not quite

the ordinary distribution that we find in the rest of renal calculi. In such cases we generally find the pain radiating from the region of the gall bladder onwards and upwards, running towards the left and running upwards. We may find it running downwards and obliquely towards the umbilicus, but it rarely gets below this. The patient in "Elizabeth" Ward complains that the pains radiate in the direction marked on the diagram, below the umbilicus; that is quite unusual, so that we begin to ask ourselves whether it is a case of pure biliary calculus, or whether there may be something more at the back of it, possibly some malignant disease. The aspect of the patient is certainly not that of malignant disease. The history of the case and her aspect are both those of simple biliary calculus.

It is sometimes rather difficult to distinguish whether the pain felt upon the right side is due to a biliary calculus or to a calculus passing down the ureter—a renal calculus. Of course in the patient in "Elizabeth" Ward, the diagnosis is facilitated by the fact that she is deeply jaundiced, so that we think there of a biliary and not of a renal calculus. But in some cases of biliary calculus the patient is not jaundiced at all, and the reason of it is simply this, that when a stone is passing from the gall bladder into the duct, it may be just of sufficient size to distend the vesical duct, and to cause pain as it passes down from the gall bladder; and yet although it is large enough to do this, it is not large enough to block the common bile duct. And so the pain which is due to the distension of the biliary duct by passage of the gall stone, may cease abruptly whenever the gall stone gets into the common bile duct. You may find intense pain in the right side in a patient which leads you to think that it is due either to distension of the gall duct or of the ureter by calculus, and seeing no jaundice, you are in a little difficulty to decide which it is.

Now, you may say at first that the diagnosis ought to be perfectly easy, because if a stone is passing down from the right kidney, there should be albumen in the urine, but that does not always help you. Because, supposing you have the kidney with a stone in it, the stone may fall into the ureter, so that you may have absolutely normal urine, because the ureter is completely blocked up. Of course, as a rule, the diagnosis clears itself up in a day or two, because as the substance that is causing the blockage passes down, you find either blood or albumen in the urine. But for a couple of days, at least, you may have perfectly

normal urine, which is derived from the other kidney, and yet the ureter on one side is completely blocked. The point that we generally attend to in trying to diagnose between these two cases, is the conduction of the pain. In the case of the renal calculus, the pain generally passes down, and very often is felt pretty acutely in the testicle corresponding to the kidney in which the calculus is found.

In regard to the treatment of pain in the abdomen, I have mentioned to you that those chronic pains which are like those of headache, and which come on in gouty and rheumatic patients, are best treated by the use of salicylate of soda and bromide of potassium. In some cases where the pains are due to irritability of the intestine, you may relieve them by codeine, which has the same sedative effect upon the intestine that morphine has, and it does not tend to cause the same amount of constipation. The pain of biliary and renal calculus is somewhat relieved by warm baths and warm fomentations, but, as a rule, when the pain is too acute for that, you have to try something stronger. I have sometimes found great relief from the administration of the compound spirit of ether, and a mixture I not infrequently use is—

R.

Sp. Æther. Co. minima, x. vel. xx. ;

Sp. Æther. nitros. ʒ ss. vel. i. ;

Sp. Chloroform, minima, x. ;

Sp. Ammon. aromat. minima, xv. ;

Aq. menth. pip., ad. ʒ i.

Misce. ; fiat haustus pro re nata sumendus.

And to this I very often add a preparation which is not in the Pharmacopœia, namely *Nepenthe*, in doses of 10 minims. This mixture very frequently gives considerable relief, but if the pain is very severe you may give it and get very little good out of it, because then I do not think absorption goes on to any great extent in the stomach, and practically, in these very severe cases, the only thing one can do is to give subcutaneous injections of morphine. You may try a sixth, and if not sufficient, as very often it is not, you can give up to a third or even half a grain ; but even after this, if you find the patient is not relieved, what are you to do then? Are you to go on giving morphine indefinitely? I think it is best not. We find sometimes that

patients do not seem to obtain relief, and the pain in some of those cases is simply awful. I have seen a very strong man, one of the strongest and healthiest I have ever seen, simply squirm like a worm that had been trodden on under the effect of a calculus passing down from his gall bladder. When morphine does not give relief, the next best thing is to give some chloroform, and the effect of this added to that of the morphine will very often be to obtain quiet. There are some cases where it is difficult to get the pain subdued at all, and I have used Junker's Inhaler, giving the man the ball of the inhaler in his hand. When the pain became excessive, he worked the ball, and as soon as he got a certain amount of chloroform vapour into his lungs the pain subsided. Then, as the effect of the chloroform has passed off, the pain began to increase again. I let him work the ball again, and in this way obtained a sort of self-regulating apparatus. The greater the pain the more the man worked the ball, and the more chloroform he inhaled, but as the pain subsided he ceased to work the ball, he consequently inhaled less chloroform, and so there was no risk of his getting an overdose. It would be impossible to go into all the causes of abdominal pain, because they are very numerous, and it would take many hours to go through them, but some of those mentioned are instructive.



